

REMARKS

The enclosed is responsive to the Examiner's Office Action mailed on July 21, 2008.

At the time the Examiner mailed the Office Action claims 1-28, were pending. By way of the present response Applicants have: 1) amended claims 1, 5-7, 10, 11, 15, 17, 18, 21, 24, and 28; and 2) added no claims; and 3) canceled no claims. As such, claims 1-28 are now pending. Support for the amendment can be found at least in paragraphs [0030] to [0032]. No new matter has been added. Applicants respectfully request reconsideration of the present application and allowance of all claims now presented.

Claim Objections

The Examiner objected to claim 28 because line 2 of claim 28 recited the phrase "communication with" twice in succession. Applicants have amended claim 28. Accordingly, Applicants request withdrawal of the objections to claim 28.

Claim Rejections – 35 U.S.C. § 103

The Examiner rejected claim 1 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent 4,914,513 by Spigarelli et al. (hereinafter, "Spigarelli") in view of U.S. Patent 6,393,942 by Chang et al. (hereinafter, "Chang"). In light of the amendment, the Examiner's rejections have become moot. Nonetheless, the following remarks regarding the Examiner's rejections and the amended claims may be helpful to expedite prosecution.

Claim 1, as amended, relates to a method of processing an electronic assembly, comprising: capturing an image of a contact formation on a surface of a

semiconductor package, wherein the contact formation has a surface comprising a first area and a second area, where in the first area is a normal brightness area and the second area is a dull brightness area, the image having a width and a plurality of pixels, the pixels having side lengths of at least 20 percent of the width of the image; selecting pixels from the plurality of pixels, wherein the selected pixels have a minimum threshold of normal brightness area; approximating a contact formation shape and location based upon the shape of the pattern of selected pixels; calculating a center of the approximated contact formation shape and location, which corresponds to a captured contact point corresponding to an actual contact point on the contact formation; and placing the semiconductor package on a circuit board having a socket such that the actual contact point is in a selected position relative to the socket.

In contrast, Spigarelli at least fails to disclose or suggest the pixels having side lengths of at least 20 percent of the width of the image; nor selecting pixels from the plurality of pixels, wherein the selected pixels have a minimum threshold of normal brightness area; nor approximating a contact formation shape and location based upon the shape of the pattern of selected pixels; or calculating a center of the approximated contact formation shape and location. The Examiner has correctly identified that Spigarelli fails to disclose or suggest that the pixels having side lengths of at least 20 percent of the width of the image. Further, Spigarelli appears to teach away from claim 1, as indicated in column 1, lines 64-68, wherein Spigarelli discloses that an operator manipulates the pick-and-place head. The operator would

not be able to select pixels from the plurality of pixels, wherein the selected pixels have a minimum threshold of normal brightness area; nor approximate a contact formation shape and location based upon the shape of the pattern of selected pixels; calculating a center of the approximated contact formation shape and location.

Chang is introduced to provide the feature related to the pixels having side lengths of at least 20 percent of the width of the image. However, Chang fails to remedy all the deficiencies of Spigarelli. Chang appears to disclose a method for finding raw features using either the Hough transform or the Cognex Blob tool, figure 4, and column 7, lines 23-46. Neither method appears to disclose nor suggest approximating a contact formation shape and location, such as a circle 120, figure 6c in the specification, **based upon the shape of the pattern of selected pixels 118**, figure 6b in the specification; and then calculating a center 122. figure 6c, of the approximated contact formation shape and location, such as circle 120, figure 6c. Chang appears to disclose segmenting the image into binary valued pixels, but is silent regarding how an X and Y location is determined therefrom.

Chang fails to recognize the advantage of using the pattern of selected pixels to first approximate the shape and location of the contact formation image, such as a circle, and then calculate the center of the contact formation. Since dull areas can distort the pattern of selected pixels, as can the location of the pixels relative to the contact formation, various pixel patterns can be used to identify the extent of such distortions, especially when coupled with expected contact formation shapes. For

example, a symmetric selected pixel pattern 118, may indicate that the approximated circle 120 lies directly over the outer edge 34 of the actual contact formation 16, as described in paragraph [0031]. It is asserted that this approach is believed to provide superior accuracy of alignment over the prior art of record, such as by merely averaging pixel locations in a blob of pixels to approximate the center of the blob.

Applicant, accordingly, respectfully requests withdrawal of the rejections of claim 1 under 35 U.S.C. § 103(a) as being unpatentable over Spigarelli in view of Chang.

The Examiner rejected claim 2-6 and 18, 19, 24 and 25 under 35 U.S.C. § 103(a) as being unpatentable over Spigarelli and Chang and further in combination with U.S. Patent Publication 2003/0133603 by Mitsumoto (hereinafter, "Mitsumoto"). In light of the amendment, the Examiner's rejections have become moot. Further, in view of the above remarks, a specific discussion of the dependent claims is considered to be unnecessary. Therefore, Applicants' silence regarding any dependent claim is not to be interpreted as agreement with, or acquiescence to, the rejection of such claim or as waiving any argument regarding that claim. Nonetheless, the following remarks regarding the Examiner's rejections and the amended claims may be helpful to expedite prosecution.

Independent claim 18 is related to many similar limitations related to claim 1. Independent claim 24 relates to an apparatus comprising a machine readable medium having instructions comprising many similar limitations related to claim 1.

Mitsumoto is introduced to disclose the limitation of picking up the package from a support, but fails to remedy the deficiencies of Spigarelli and Chang. Mitsumoto is related to

performing mechanical operations while the recognition process is occurring, but fails to disclose or suggest at least the above discussed limitations of approximating a contact formation shape and location, such as a circle 120, figure 6c in the specification, **based upon the shape of the pattern of selected pixels 118**, figure 6b in the specification; and then calculating a center 122. figure 6c, of the approximated contact formation shape and location, such as circle 120, figure 6c.

Applicant, accordingly, respectfully requests withdrawal of the rejections of claims 2-6 and 18, 19, 24 and 25 under 35 U.S.C. § 103(a) as being unpatentable over Spigarelli and Chang and further in combination with Mitsumoto.

The Examiner rejected claims 7-14 under 35 U.S.C. § 103(a) as being unpatentable over Spigarelli, Chang and Mitsumoto and further in combination with U.S. Patent Publication 2003/0066952 by Swab (hereinafter, "Swab"). In light of the amendment, the Examiner's rejections have become moot. Further, in view of the above remarks, a specific discussion of the dependent claims is considered to be unnecessary. Therefore, Applicants' silence regarding any dependent claim is not to be interpreted as agreement with, or acquiescence to, the rejection of such claim or as waiving any argument regarding that claim. Nonetheless, the following remarks regarding the Examiner's rejections and the amended claims may be helpful to expedite prosecution.

Swab is introduced to disclose the feature of a captured image including only the normal brightness area of the outer surface of the contact formation. Swab relates to the use of a polarizer to address contrast problems. However, Swab at least fails to disclose or suggest approximating a contact formation shape and location, such as a circle 120,

figure 6c in the specification, based upon the shape of the pattern of selected pixels 118, figure 6b in the specification; and then calculating a center 122. figure 6c, of the approximated contact formation shape and location, such as circle 120, figure 6c, and fails to remedy the deficiencies of the prior art of record.

Applicant, accordingly, respectfully requests withdrawal of the rejections of claims 7-14 under 35 U.S.C. § 103(a) as being unpatentable over Spigarelli, Chang and Mitsumoto and further in combination with Swab.

The Examiner rejected claims 15-17, 20 and 21 under 35 U.S.C. § 103(a) as being unpatentable over Spigarelli, Chang, Mitsumoto and Swab and further in combination with U.S. Patent Publication 2003/000739 by Frutschy et al. (hereinafter, “Frutschy”) and evidentiary reference 2003/0150645 by Chiu (hereinafter, “Chiu”). In light of the amendment, the Examiner’s rejections have become moot. Further, in view of the above remarks, a specific discussion of the dependent claims is considered to be unnecessary. Therefore, Applicants’ silence regarding any dependent claim is not to be interpreted as agreement with, or acquiescence to, the rejection of such claim or as waiving any argument regarding that claim. Nonetheless, the following remarks regarding the Examiner’s rejections and the amended claims may be helpful to expedite prosecution.

Independent claim 21 relates to many similar limitations related to claim 1. Frutschy and Chui are introduced to disclose the feature of a microprocessor and a motherboard. However, both Frutschy and Chui at least fails to disclose or suggest approximating a contact formation shape and location, such as a circle 120, figure 6c in the specification, based upon the shape of the pattern of selected pixels 118, figure 6b

in the specification; and then calculating a center 122. figure 6c, of the approximated contact formation shape and location, such as circle 120, figure 6c, and fails to remedy the deficiencies of the prior art of record.

Applicant, accordingly, respectfully requests withdrawal of the rejections of claims 7-14 under 35 U.S.C. § 103(a) as being unpatentable over Spigarelli, Chang, Mitsumoto and Swab and further in combination with Frutschy and evidentiary reference Chiu.

The Examiner rejected claims 22, 23 and 26-28 under 35 U.S.C. § 103(a) as being unpatentable over Spigarelli, Chang, Mitsumoto, Swab and Frutschy and evidentiary reference Chiu and further in combination with U.S. Patent Publication 2003/0132513 by Chason et al. (hereinafter, “Chason”). In light of the amendment, the Examiner’s rejections have become moot. Further, in view of the above remarks, a specific discussion of the dependent claims is considered to be unnecessary. Therefore, Applicants’ silence regarding any dependent claim is not to be interpreted as agreement with, or acquiescence to, the rejection of such claim or as waiving any argument regarding that claim. Nonetheless, the following remarks regarding the Examiner’s rejections and the amended claims may be helpful to expedite prosecution.

Chason is introduced to disclose the feature of a reel with adhesive tape. However, Chason at least fails to disclose or suggest approximating a contact formation shape and location, such as a circle 120, figure 6c in the specification, **based upon the shape of the pattern of selected pixels 118**, figure 6b in the specification; and then calculating a center 122. figure 6c, of the approximated contact formation shape and location,

such as circle 120, figure 6c, and fails to remedy the deficiencies of the prior art of record.

Applicant, accordingly, respectfully requests withdrawal of the rejections of claims 15-17, 20 and 21 under 35 U.S.C. § 103(a) as being unpatentable over Spigarelli, Chang, Mitsumoto, Swab and Frutschy and evidentiary reference Chiu and further in combination with Chason.

CONCLUSION

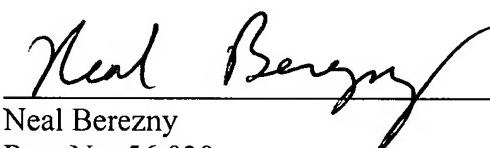
Applicant respectfully submits that the present application is in condition for allowance. If the Examiner believes a telephone conference would expedite or assist in the allowance of the present application, the Examiner is invited to call Neal Berezny at (408) 720-8300.

Pursuant to 37 C.F.R. 1.136(a)(3), applicant(s) hereby request and authorize the U.S. Patent and Trademark Office to (1) treat any concurrent or future reply that requires a petition for extension of time as incorporating a petition for extension of time for the appropriate length of time and (2) charge all required fees, including extension of time fees and fees under 37 C.F.R. 1.16 and 1.17, to Deposit Account No. 02-2666.

Respectfully submitted,

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